

Trade Process

AWS Lambda Case Study

Executive Summary

Vodafone Procurement Company sarl (VPC) are a Luxembourg based team that is part of the Vodafone Group company. The VPC team focus on negotiating and purchasing goods and services from vendors for use and resale by Vodafone.

The Digital Trade system focuses specifically around the negotiation between VPC and handset manufacturers. This was a process repeated every quarter in Luxembourg. The planning for the meetings, all bookings for the rooms, VC and attendees' calendars was done manually. This was a very labour intensive and convoluted process that involved as many as 300 separate individuals that had to organise within a 2 week window.

The primary purpose of the Trade Process application is to streamline and add automation to the business operations required to organise and manage the quarterly vendor meetings. The application will significantly reduce the current manual overhead involved in organising the meetings which occur every 3 months over a 2-week period. Vodafone Account Managers and Markets are required to meet with each vendor supplying devices and negotiate terms, so there is a large number of meetings to be organised and conducted in a short space of time. The automation of scheduling that the Trade Process application provides means fewer man hours organising availability and ensuring all required parties will be in attendance.

About Vodafone



Vodafone Group Finance is part of Vodafone Group PLC, a multinational telecommunications company. Its' registered office is located in Newbury, Berkshire, England and its' global headquarters is based in London, England. It predominantly operates services in the regions of Asia, Africa, Europe, and Oceania.

The Challenge

The challenge faced by the Vodafone Digital Trade team is the lack of automation in organisation of meetings. There are lots of meetings taking place in a very short period, and ensuring that every meeting includes every participant is of paramount importance. There is currently a significant amount of manual overhead every quarter when these meetings are arranged.

The main requirement of the trade process project is the ability to automatically schedule and organise meetings between large groups of people, minimising the risk of conflict, and to reduce manual overheads of this process.

Why Vodafone Chose Us

Firemind has been chosen as the vendor to provide this bespoke solution in part due to their knowledge of the internal requirements for building cloud-based architecture, including security, access control, as well as the separation of concerns. Firemind has through their working relationship with Vodafone in the past understood the internal processes required to deploy a cloud solution, and support the business unit through this process.

To be able to understand the business challenge, a clear understanding of the businesses internal requirements had to be understood, Firemind carried out workshops as part of the requirements gathering process to better understand how the solution would fit into the business, providing technical, and business solutions to the challenge at hand. Firemind's experience working with Vodafone's internal processes in the past supplemented these workshops.

Why Amazon Web Services (AWS)

Vodafone chose Amazon Web Services for this solution at the recommendation of Firemind. AWS's mature offerings in the serverless platform including AWS Lambda, DynamoDB made AWS the best choice for starting a new serverless application. The availability of the well matured and developed machine learning tools, opened up the opportunity to expand this tool in the future.

AWS provided the capabilities to meet and exceed the internal security requirements, making security a first-class citizen, ensuring commercially sensitive data was behind strict access controls, using advanced IAM controls, as well as being encrypted at rest and in transit - all whilst being effectively invisible to the user.

Our Solution

Firemind have designed a bespoke solution using Serverless-first principles, the application was created using Primarily Lambda, DynamoDB and where DynamoDB was not a good fit, Aurora Postgres.

As part of the build process, the solution was separated into two separate groups of components, one being the meeting booking services, and the second being user access management, in order to meet security requirements, the solution was required to be integrated into the existing enterprise user management environment. A natural choice to carry out this operation, was Amazon Cognito. However, due to the nature of the way in which users were required to be authenticated within this solution, Firemind decided to instead integrate the user into an already existing auth stack, which could provide HTTPS API access (also Using AWS Lambda and API Gateway) to LDAPS via Amazon PrivateLink to communicate with an on-premise active directory service.

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By using Lambda for the application layer we can provide a compute layer that can scale independently of other resources - maintenance free. For deployments to the Lambda Service we used the fully managed CloudFormation service, allowing us to have an agile and fast release cycle. This release cycle, combined with the flexibility of Lambda's allowed for a true microservices architecture, each function would only carry out specific tasks, in response to events. The responses to these tasks would then be moved to a queue, or an SNS topic for further processing by another Lambda.

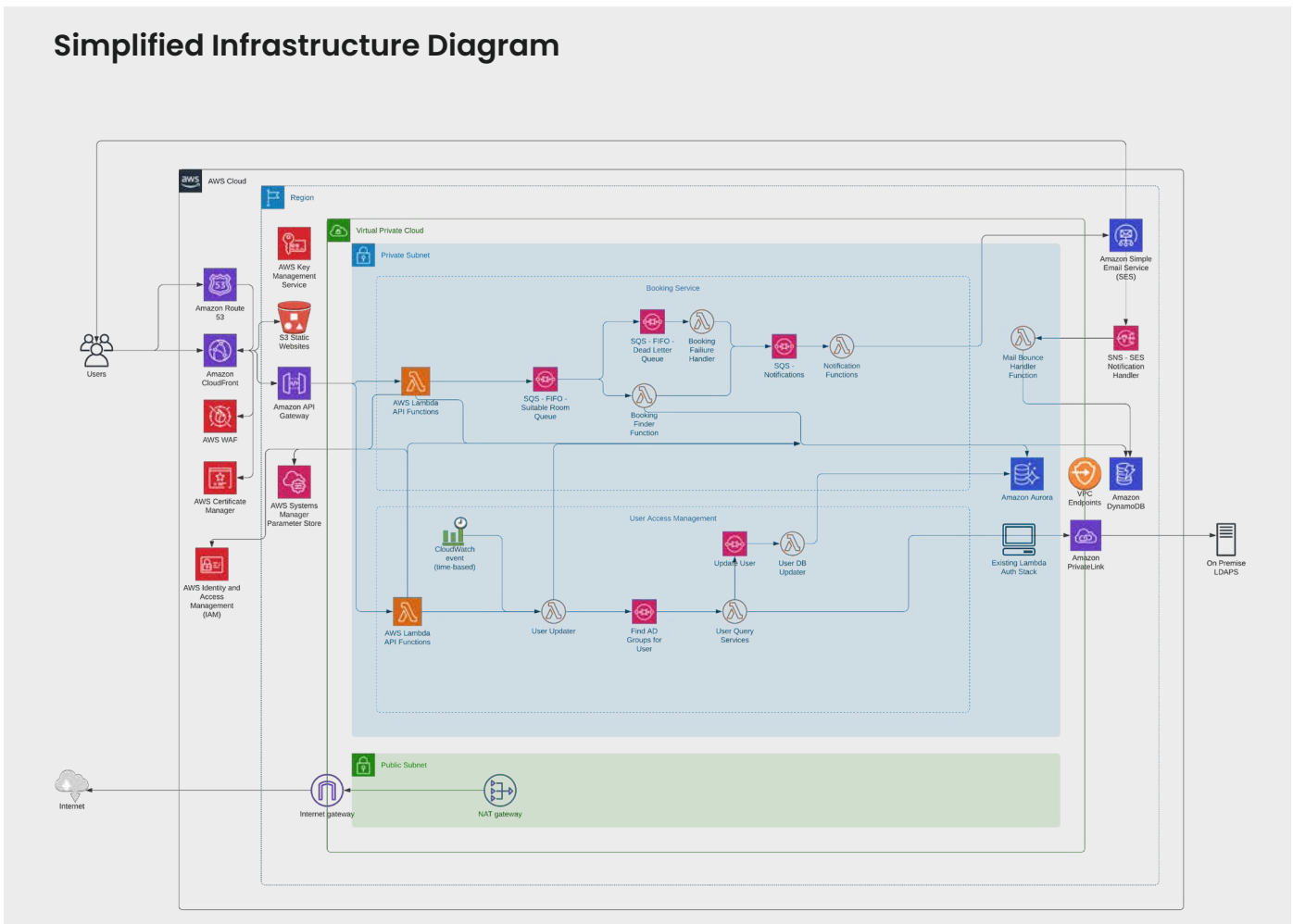
An important part of enterprise architecture is the monitoring of applications, by using Lambda with CloudWatch, including adding metrics on queues, the application layer can be monitored for failures, and appropriate remediations take place.

As part of the serverless best practices the queues used for decoupling are all configured with dead-letter queues, intended to provide a mechanism for handling failures outside of our control, these queues integrated further with Lambda functions allowing either automated intervention, or manual intervention through the existing notification channels.

As a great deal of the requirements involved informing users, and adding information to user calendars, we decided to handle this with an email service, the natural fit for this was the Amazon SES, which was used for sending of emails into users.

This solution was bought together, and made available to the users using API Gateway, which was accessed using a bespoke web interface, hosted on Amazon S3, accessed via CloudFront.

Simplified Infrastructure Diagram



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Results & Benefits

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This is a huge advantage, because not only does it free Vodafone staff to work on more pressing issues, it opens up the opportunity to allow these managers to work autonomously of each other while having this automation work out their schedules, book the meetings, book the rooms, and book the VC lines.

Next Steps

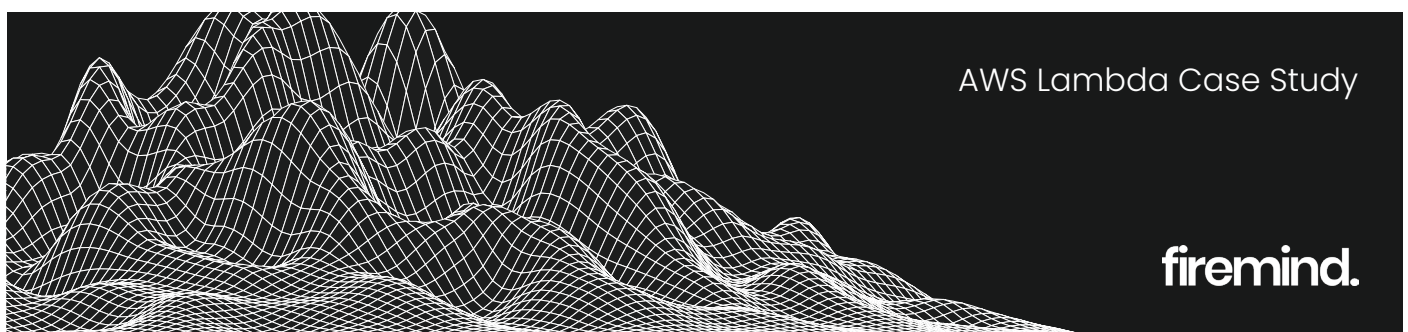
As Firemind work more closely with VPC, they want to expand the Digital Trade service to also include data collection such as taking the result of these meetings, visualising them and providing more of an insight into what the deals are that are negotiated and providing a greater cost saving to the Vodafone Group.

This additional work will unlock further processing requirements from the AWS cloud as well as a further development from the Firemind side.

About Firemind

Firemind leads with innovation to drive better value, discover insights, and deliver tangible outcomes. Firemind deliver smart and secure digital solutions designed for every business goal.

Built on the foundation of pioneering data science, great engineering, powerful visualisation and intuitive user experience, Firemind's expertise spans across multiple verticals. Firemind utilises a whole range of technology services to provide rapid, cost-efficient and innovative business solutions.



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